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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,591	12/15/2000	Jim Otter	60,246-116	1229

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EXAMINER
PARKER, FREDERICK JOHN

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 03/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/738,591	OTTER, JIM	
	Examiner	Art Unit	
	Frederick J. Parker	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,7,22,25-27 and 29-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *27 and 40* is/are allowed.

6)☒ Claim(s) *1-3,5,7,22,25,26,29-39 and 41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The finality of the rejection of the last Office action is withdrawn in view of Applicant's arguments to correct several apparent errors and an inadvertent omission.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 41 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim filed 7/27/05 is new matter because the original filing never teaches regulating a roller temperature to prevent the film from cooling; Specification page 4, 19-20 only discloses a roller 24 which regulates the cooling rate of the film, and accordingly does not prevent the film from cooling.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1-3, 5,22,26,33-35,37-39,41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789 and further in

view of Barclay US 2899288 in combination, or optionally further in view of Gilbert et al US 3813231.

Bentley teaches a heat exchanger part formed by laminating a corrosion-resistant, stable thermoplastic polymer sheet material to a metal surface (carbon steel, aluminum, etc), col. 3, 43-col. 4, 43. In service, the resultant part permits flow of condensed water which is removed from the unit in the presence of a corrosive flue gas. The mode of making the polymer sheet material is not limited, thereby including extrusion per claim 38. It is further the Examiner's position that the method of making the sheet is irrelevant since material behavior is the same regardless of forming method, absent a clear showing to the contrary. Use of polar particulates on the sheet material is not cited.

Kaneko et al teaches forming similar heat exchanger parts comprising a metal substrate onto which is applied a thermoplastic, corrosion-resistant polymer coating film, and then applying thereto polar silica particles to increase wettability of the surface and hence process efficiency (col. 1, 30-50; col. 2, 52-63; col. 3, 3-37). Application may be by powders, an aqueous suspension, sol solution, etc. As noted in Example 8, resin-coated panels were squeezed and dried, followed by application of the silica in sol form (a sol being a liquid dispersion of very fine-sized particulates), followed by roller squeezing and heating (necessarily ultimately including cooling to provide utility to the article), according to claims 3-4.

Both references are directed to forming heat-exchanger parts having surfaces which are corrosion resistant by virtue of a thermoplastic polymeric surface layer (per claim 2) and demonstrate wettability to allow condensate flow. While Bentley et al does not teach application of polar particles, Kaneko et al explicitly teaches to apply such particles for improved wetting,

such that one of ordinary skill would have been motivated to apply polar particles to the thermoplastic sheet material of Bentley et al to provide the advantage of improved wetting and process efficiency. The concept of application of particles to a heated film and embedding with a thermally controlled roller is not cited.

Barclay teaches to apply and spread abrasive particles onto a preheated thermoplastic sheet which may be softened by the heat, and running the coated/preheated sheet through a pair of rollers (per claim 5) with a cooling fluid therein so that temperature of the particle coated sheet is regulated (per claim 41, read in view of the specification) to allow embedding of the particles and cooling to return the plastic material to its "original state (solid). See col. 1,63- col. 2, 12. Barclay provides a method of bonding particles to plastic substrates which obviates an adhesive, thereby improving cost-effectiveness, and is simpler and commercially feasible (col. 1, 25-35). Since Barclay is directed to applying and adhering particles to a plastic sheet, as is the combination of references above, although for different products Barclay is analogous art directed towards the same field of endeavor (applying particles to a polymeric sheet substrate) . In re Biglio 72 USPQ2d 1209.

Optionally the Examiner further introduces Gilbert which teaches embedding particles into a polymeric sheet using heat and pressure, in place of the use of adhesives, to reduce the rigid nature of the product (due to the adhesive) and to improve bonding of particles to the sheet (col. 1, 58-61; col. 2, 10-40), thereby supplying further motivation for introducing the method of Gilbert in place of the adhesive bonding method of the prior art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Bentley et al by incorporating polar particles onto the corrosion-

resistant thermoplastic as taught by Kaneko et al to improve wettability and overall process efficiency, and further incorporate the concept of embedding particles into the sheet using heat and pressure as taught by Barclay and optionally Gilbert to provide an improved method which eliminates the detriments of adhesive and provides a simpler, more cost-effective process.

As to claims 37 & 22, Kaneko et al expressly discloses polar silica particles and olefin type resin films (col. 2, line 61), encompassing conventional polyolefins. Surface tension/ energy of the film comprising the polar silica particulates must necessarily be increased in both the Applicants invention and combination of references of the rejection to increase flow/ wettability of condensed water as taught by Kaneko et al (col. 3, 23-53) per claim 26. As to claim 5, using both adhesive and hot pressing to imbed particles together would have been an obvious method of adhering particles since both ways are know means to bond particles to a thermoplastic sheet substrate.

2. Claims 25,29-32,36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789 and further in view of Barclay US 2899288 in combination, or optionally further in view of Gilbert et al US 3813231, and further in view of Rickert Jr US 4181773 or Stewart US 4921646 or Steele et al US 5264250 or Hommeltoft et al US 5245100 (hereafter the "alternate references").

While Bentley et al does not teach application of polar particles, Kaneko et al explicitly teaches to apply such particles for improved wetting, such that one of ordinary skill would have been motivated to apply such polar particles, e.g. silica, to the thermoplastic sheet material of Bentley et al to provide the advantage of improved wetting and process efficiency. While

additional polar particulates are not taught, the alternate references teach additional inorganic polar particulates, as follows;

Steele teaches coating heat transfer surfaces to provide wetting, the coating comprising inorganic particulates of silica and/ or calcium silicate (= wollastonite), col. 3, 6-38.

Rickert Jr teaches coating aluminum surfaces to render them wettable by applying coatings comprising alumina, etc, col. 1, 51 to col. 2, 14.

Stewart teaches on col. 3, 1-4, that talc, glass (= silica), etc have polar properties.

Hommeltoft et al teaches on col. 3, 41-44 the equivalence of zirconia , titania and silica as polar ceramic materials. Titania is inherently a germicidal material as defined by Applicants, see Specification page 5, 15-17, thereby meeting the limitation of claim 25.

Since the alternate references teach other inorganic polar materials including those used to coat surfaces to enhance wetting, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute one or more of wollastonite, alumina, or talc in place of silica as taught by Bentley et al , Kaneko et al, Barclay, and optionally Gilbert because the particulates of the "alternate references" would have been expected to improve the wettability of surfaces to which they are applied.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789 and further in view of Barclay US 2899288 in combination, or optionally further in view of Gilbert et al US 3813231, and further in view of further in view Linford US 6132801.

Linford teaches on col.1, 33-54 and col. 5, 1-8 that the application of a polymeric coating on silica and other inorganic particles allows a more robust coating attachment in micro particle/

polymer composite materials to prevent de-bonding of the particles. Since the combination of references teaches polar particles adhered to a polymeric base, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Prior Art references by coating the applied particles with a polymeric coating as taught by Linford to provide the benefits of a stronger attachment of the particles to the base, thereby reducing de-bonding of the crucial inorganic particles and resulting in a longer useful lifetime of the parts.

4. Claims 27 and 40 are allowable for the reasons cited in the previous Office Actions.

Response to Arguments

The Examiner has considered Applicants arguments relative to the last Office Action. Applicants arguments are directed to the assertion that Barclay and Gilbert are non-analogous art, and not reasonably pertinent to Applicants' particular problem.

Bentley in view of Kaneko are directed to bonding polar particulates to a polymeric surface to improve wetting behavior. Particles are applied followed by roller squeezing and heating for adhesion.

Barclay applies similar particles to similar thermoplastic substrates, and then providing an adhesive-free method of embedding the particles in a pre-heated sheet and regulating temperature of the substrate using rollers. As previously explained, the reference IS ANALOGOUS ART because Barclay is directed to applying and adhering particles to a plastic sheet, as is the combination of references above, although for different products. Barclay is analogous art directed towards the same field of endeavor (applying particles to a polymeric

sheet substrate) . In re Biglio 72 USPQ2d 1209. Thus the skilled artisan would have looked to Barclay for an improved means of adhering the polar particles to the substrates in making the particle-coated substrates for improved wetting and improved particle adhesion in a heat-exchange environment. Gilbert was optionally cited for similar reasons, namely an alternate and improved bonding method to replace adhesives. Thus both references are directed to the problem of embedding similar particles to similar substrates, with the motivations/ benefits of improved bonding clearly disclosed. As required by MPEP 2141.01a, the references are "reasonably pertinent" because the subject matter with which the references deal "logically would have commended itself to an inventor's attention in considering the problem", in this case bonding particulates to polymeric sheets. Hence Applicants' arguments are not persuasive.

The arguments regarding the difference in the actual process of Gilbert are noted. Gilbert was cited as optional, and is used merely to further show the advantage/ motivation of heat and pressure to embed particles in a polymeric substrate. Even if the reference was ignored or withdrawn, it would not effect or overcome the obviousness of the claims.

As to the argument there is no motivation to apply abrasive particles to the film, the Examiner respectfully points out that Applicant's particles (alumina, silica, etc) are conventionally and inherently abrasive particles, and points out sandpaper and alundum (alumina) papers containing such particles enjoy conventional and everyday use. These particles are also the same as presented in paragraph 7 of the previous Office Action (and repeated above). Just because they are not labeled as abrasive particles does not mean they are not so.

Applicant's arguments are not persuasive and the rejections are maintained.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick J. Parker whose telephone number is 571/ 272-1426. The examiner can normally be reached on Mon-Thur. 6:15am -3:45pm, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571/272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frederick J. Parker
Primary Examiner
Art Unit 1762

fjp